



# BTEC Level 1 Introductory Award in Applied Science Curriculum Map

## Year 1

Learners will develop the skills needed to carry out and present their findings from different scientific experiments in Biology, investigating the differences between living organisms.

In this unit you will:

A Investigate differences in living organisms

B Present results of scientific experiments into differences in living organisms.

Types of living organisms

- Types of living organisms e.g. fish, plants, animals, fungus, bacterium, humans.
- Life processes e.g. ability to convert food into energy, growth, excretion, reproduction, breathe, sensitivity and can move.
- Characteristics of living organisms e.g. composed of a single cell or a complex of cells that work together to carry out the various processes of life.
- Function of and differences between plant and animal cells e.g. nucleus, cytoplasm, cell membrane, mitochondria, vacuole, chloroplast and cell wall.
- How new cells develop.

Differences in humans

- Variations in humans, e.g. height, skin colour, ear lobes, feet size, hair colour, left and right handed.
- Role of genes in inheritance e.g. chromosomes, allele, dominant recessive, mutations.

Investigations to show variations, e.g. eye colour, tongue rolling, hand-span width, thick/thin hair.

Autumn 1

# BTEC Level 1 Introductory Award in Applied Science Curriculum Map

Autumn 2

## Scientific experiments

- Selection and use of simple laboratory apparatus - slides, slide cover, microscope, pipette, test tube.
- Safety, to include: using safety equipment, e.g. goggles, spectacles, protective clothing behaving safely.
- Preparing and viewing slides, using simple stains of cells from plants and animals, e.g. cells of cheeks, leaf, stem, seeds, pollen, onions.
- Looking at prepared cells that show greater variations, e.g. nerves, kidney tissue, liver tissue, skin, antennae of insects, membranes of insect wings.
- Finding out about the structural differences between plant and animal cells, e.g. cell walls, chloroplasts, vacuoles, cell membranes, shape of cells.
- Finding out about the role of the nucleus in terms of containing genetic material and controlling cell functions.
- Laboratory housekeeping e.g. personal protective equipment, cleaning equipment after use, appropriate storage.

## Basic keys for identification purposes

- Different types of keys for identification, e.g. yes/no questions, flow charts with text and/or illustrations, branching.

Using keys to identify living organisms by their characteristics, e.g. leaf shape, leaf patterns, flower shape, colour, number of legs, body divisions, wings or no wings.

# BTEC Level 1 Introductory Award in Applied Science Curriculum Map

Spring 1

Learners will find out about different aspects of physics. They will develop skills needed to construct simple electric circuits and take electrical measurements.

## Energy stores and energy transfers

- Importance of energy stores and energy transfers, including:
  - chemical, e.g. fuel and oxygen
  - kinetic e.g. in a moving object
  - gravitational e.g. due to the position of an object in a gravitational field
  - elastic, e.g. in a stretched or compressed spring
  - thermal
  - mechanically e.g. when a force moves through a distance
  - electrically
  - by heating because of a temperature difference
  - by radiation, e.g. light, microwaves, sound.
- Measuring energy transfers e.g. energy conservation, power, efficiency, economic costs, unit (Joule).

## Waves

- Waves e.g. transverse, e.g. light, microwave, infrared, water waves, longitudinal waves - sound, seismic P waves.
- Measurements e.g. wavelength, amplitude and frequency e.g. hertz (Hz).
- Using meters to measure waves, such as a:
  - light meter to measure the intensity of light
  - sound metre to measure the loudness of sound in decibels.
- Seeing how the wave shown on a sound meter or cathode ray oscilloscope (CRO) changes as the frequency and loudness of the sound changes.
- Investigating how waves are reflected, e.g. light reflected by mirrors, echoes.

# BTEC Level 1 Introductory Award in Applied Science Curriculum Map

Spring 2

## Electricity

- Safety, to include: using safety equipment, e.g. goggles, spectacles, protective clothing behaving safely.
- Components e.g. ammeter, voltmeter, battery, resistor, bulb, cell, wire.
- Basic circuit theory, including:
  - the need for a complete circuit
  - current (mA, A), voltage (mV, V), resistance ( $\Omega$ )
  - simple series and parallel circuits
  - use of ammeter, voltmeter, multi-meter to take measurements.
- Power supplies, including:
  - types of battery, e.g. rechargeable, non-rechargeable
  - solar cells
  - simple generators, e.g. bicycle dynamo, rotating a coil in a permanent magnetic field.

## Physics and the environment

- Uses of physics e.g. predict the weather, analyse contents of atmosphere, find out how the sun's radiation interacts with gases in our atmosphere, measure heat inputs and outputs from space.

Scientific equipment to monitor change in our environment, e.g. remote sensing, equipment using passive and active sensors, satellites, weather sensors, telescopic cameras, solar wind power.

# BTEC Level 1 Introductory Award in Applied Science Curriculum Map

Summer 1

Learners will develop the skills and behaviours needed to progress to the next stage in their learning, identifying progression opportunities and creating a plan to enable them to get there.

A Explore the skills and behaviours needed to meet personal progression goal

B Produce a progression plan to meet intended progression goal.

Benefits and purpose of developing a progression plan

- Gives direction and focus to short-term and long-term goals.
- Sets out the key steps to achieve progression goal.
- Allows for discussion with others, e.g. tutors, parents, peers.
- Gives time for reflection on what is achievable and realistic.

Finding out about progression opportunities

- Progression opportunities such as to further learning, work or apprenticeships.
- Local sources of information about potential progression routes such as colleges, careers fairs.
- Sources of advice and guidance for progression.
- Tutor advice.
- Careers advice.
- Entry requirements such as baseline entry qualifications, an entry interview, portfolio.

Setting a progression goal

- Matching own skills and behaviours with progression goals.
- Deciding on the next step, e.g. using SMART (specific, measureable, achievable, realistic, time-bound) targets.
- Using research findings to identify the requirements to meet goals.
- Setting a progression goal to work towards.

Identifying the skills and behaviours needed to meet progression goal

- Skills needed to meet progression goal:
  - transferable skills, e.g. communication, working with others, problem solving
  - employability skills, e.g. IT skills, being able to drive.
- Behaviours needed for progression goal, e.g. reliability, efficiency, being trustworthy.
- Qualifications needed for progression, e.g. level of English and maths.

## BTEC Level 1 Introductory Award in Applied Science Curriculum Map

Summer 2

Reviewing own skills and behaviours against progression goal

- Carrying out a self-audit of skills and behaviours using past experience of education and learning.
- Gathering feedback from others about own strengths and areas for improvement.
- Attitudes and behaviours needed for progression.